

A Proposal to:

**The NOAA Coastal Services Center
2006 Coastal Management Fellowship Program**

Submitted by:

Massachusetts Office of Coastal Zone Management

Project Title:

**Preparing for the Storm:
Modernizing Massachusetts Floodplain Management through Strategic Planning,
Regulatory Revision, and Land Use Reform**

Massachusetts Office of Coastal Zone Management
251 Causeway Street
Suite 800
Boston, MA 02114-1219
(617) 626-1200
Fax: (617) 626-1240

Susan Snow-Cotter
Director

Rebecca Haney
Coastal Geologist and
Hazards Coordinator

Andrea Cooper
Coastal Smart Growth
Coordinator

Background and Introduction

The coastal floodplain of Massachusetts is vulnerable to storm waves and surge, wind, and flooding from coastal storms. These storms can have devastating consequences, potentially resulting in loss of life, extensive property damage, destruction of public infrastructure, and the resulting environmental impacts from the release of sewage, oil, debris, and other contaminants. These potential impacts are compounded by relative sea level rise and increased development along the shore. While Massachusetts has developed targeted regulatory and technical assistance efforts to address coastal storm damage prevention, the time is right to update and modernize these efforts with the overall goal of developing a comprehensive coastal floodplain management strategy for the state.

From an environmental perspective, coastal floodplains are regulated through the state's Wetlands Protection Act (WPA). Enacted in 1972, the WPA was the first statewide wetlands protection law in the nation. The purpose of the WPA is to protect coastal and inland wetlands for flood control, storm damage prevention, pollution prevention, wildlife and fish/shellfish habitat, and other public interests specified in the Act. Because of the unique Home Rule tradition of Massachusetts, the WPA gives local Conservation Commissions the lead authority and responsibility to implement the Act through the review and permitting of local projects.

The WPA regulations identify 11 specific coastal resource areas to be protected, including Coastal Beaches, Coastal Dunes, Barrier Beaches, Coastal Banks, Rocky Intertidal Shores, and Salt Marshes. For these 11 resource areas, the WPA regulations provide definitions, the functions and critical characteristics of the resource area, and performance standards for regulating activities in the resource area. The WPA also identifies Land Subject to Coastal Storm Flowage (LSCSF) and several other broader resource areas to be protected. LSCSF is defined as "land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record, or storm of record, whichever is greater." Specific performance standards were not promulgated in the WPA regulations for these broader resource areas, including LSCSF.

A Coastal Floodplain Task Force was formed in 1991 to describe the importance and beneficial functions of the coastal floodplain in Massachusetts, and to generate scientifically based technical standards for the review of proposed projects in LSCSF. Task Force members included state, federal, and local officials, research scientists, and consultants, together having a wide range of expertise in floodplain issues. The Task Force completed its work in 1995 and presented its recommendations to the Massachusetts Department of Environmental Protection (DEP), the state agency charged with administering the WPA. Because of staffing issues and competing priorities, DEP could not act on the Task Force recommendations at that time, and the recommendations are now in need of updating to reflect more recent guidance and technical information.

From the building safety perspective, the State Building Code provides construction standards for Massachusetts, and includes specific requirements for construction in coastal floodplains. These standards focus on protecting the structural integrity of structures and do not address the planning and management components necessary to guide development in the floodplain. The State Building Code also does not specifically protect the flood control interests of coastal resource areas, and it could be updated to better reflect today's science and engineering to advance storm damage protection goals.

For several reasons, now is the time to actively address coastal floodplain management in Massachusetts. First, the state is convening a legislatively mandated Coastal Hazards Commission made up of state legislators, state agency decision makers, and local officials, which is charged with developing recommendations for addressing coastal hazards issues in Massachusetts. This high-level and influential Commission is likely to develop coastal floodplain management recommendations, including a recommendation to promulgate WPA performance standards for LSCSF. The political and jurisdictional focus on coastal floodplains is further strengthened by the national reaction to Hurricanes Katrina and Rita, which resoundingly demonstrated the tremendous vulnerability of development in coastal floodplains. In response, Massachusetts Governor Mitt Romney has asked all state agencies to actively evaluate planning, regulatory, and emergency response activities to prepare for severe coastal storms in this state. In addition, the Cape Cod Commission, a regional planning agency, incorporated the 1995 Coastal Floodplain Task Force recommendations into its regional policy plan, which directs development activities on Cape Cod. To facilitate implementation of the recommendations, the Cape Cod Commission developed a Model Floodplain District Bylaw, which has been enacted in several Cape Cod communities. The experience of these communities could inform the development of statewide standards.

Finally, several Massachusetts Office of Coastal Zone Management (CZM) projects and initiatives have been completed or are underway that can be used to develop a sustainable coastal floodplain management strategy. On the coastal hazards front, CZM has completed a study of repetitive loss structures along the most vulnerable areas of the coast and has developed a Primary Frontal Dune mapping technique that utilizes CSC-acquired LIDAR data, both of which have direct application for coastal floodplain management. CZM is also developing a Coastal Structures Inventory, a database of the condition, size, and use of coastal structures that can be used to improve the state and local governments' ability to make rapid and accurate storm-related permitting decisions. The Cape Cod and South Shore portions of the inventory have been completed and the North Shore is currently being inventoried. CZM is also developing a *South Shore Coastal Hazards Atlas*, which provides maps and data that characterize shoreline variables needed for the review of projects vulnerable to coastal hazards.

In addition, through the Coastal Smart Growth Program, CZM is developing technical assistance, regulatory models, and outreach materials to promote local adoption and implementation of Low Impact Development (LID). LID techniques maintain natural hydrologic conditions to reduce overall stormwater runoff and the corresponding pollutant load discharged from developed sites. LID practices include strategic site

design to conserve naturally vegetated areas and reduce impervious surfaces, as well as the integration of targeted stormwater controls that encourage bioretention, infiltration, and filtration of stormwater onsite. Such techniques can play an important role in minimizing the impact of development on the coastal floodplain.

Goals and Objectives

The goal of this project is to support the development and implementation of planning, policy, regulatory, and technical assistance tools to improve coastal floodplain management in Massachusetts. The major objectives of the project are to:

- 1) Research and evaluate coastal floodplain management strategies and tools used at the federal level and in other states to identify potential models for Massachusetts.
- 2) Review coastal floodplain issues in Massachusetts and develop a report on the state of the science, policy, and regulatory environment.
- 3) Provide technical, policy, and staff support to the Coastal Floodplain Task Force, which will be reestablished to address this timely issue.
- 4) Develop recommendations for comprehensive coastal floodplain planning and management strategies and regulatory revisions.
- 5) Develop an implementation plan for these recommendations.
- 6) If time permits, implement selected recommendations by developing a CZM Floodplain Management Policy, revised regulatory language, and/or other technical assistance and management tools.

Project Description, Milestones, and Outcomes

Two CZM staff members will mentor the Fellow:

- Rebecca Haney, Coastal Geologist and Hazards Coordinator, who will provide guidance on coastal hazards and coastal floodplain issues.
- Andrea Cooper, Coastal Smart Growth Coordinator, who will provide guidance on land use planning, state planning laws, Massachusetts local governance, and LID techniques.

To develop an in-depth understanding of coastal floodplain issues in Massachusetts, the Fellow will conduct directed research and discuss the issues with CZM mentors and other technical advisors. The Fellow will then use this background and research to develop two reports: one on potential coastal floodplain management models for Massachusetts, and one on the state of floodplain management in Massachusetts. These reports will be presented to the Coastal Hazards Commission, which will provide further policy direction and prioritization for the Fellow. The Fellow will assist in convening a newly constituted Coastal Floodplain Task Force, which will provide technical support and guidance for the development of planning and regulatory recommendations. Finally, the Fellow will work with CZM staff to develop an implementation plan for those recommendations, and, if time allows, begin implementation as appropriate.

Objective 1 - Coastal floodplain management models for Massachusetts

The Fellow will research federal and state planning strategies, laws and regulations, technical assistance materials, and other efforts to manage coastal floodplains. Specific tools to consider include the NOAA Office of Ocean and Coastal Resource Management shoreline management database that is under development, the *Hawaii Coastal Hazard Mitigation Guidebook*, and Maine's newly revised Coastal Sand Dune Rules. The Fellow will evaluate the effectiveness of potential models and assess their applicability to Massachusetts. The Fellow will then work with his/her mentors to validate the applicability of the models in Massachusetts, draft the report, solicit technical review, and finalize the report. If requested by the Coastal Hazards Commission, the Fellow will present a briefing on the report.

Outcomes and Milestones: A report recommending floodplain management models for consideration in Massachusetts. (*Completed by October 2006*)

Objective 2 - Coastal floodplain science, policy, and regulatory issues in Massachusetts

With guidance and support from his/her mentors and other technical advisors, the Fellow will assess the scientific, policy, and regulatory issues affecting coastal floodplain management in Massachusetts. Specifically, the Fellow will: review the 1995 recommendations of the Coastal Floodplain Task Force, and identify areas in need of update based on current science, policy, and regulations; evaluate the implementation of the Cape Cod Commission Model Floodplain District Bylaw; review the results of the CZM repetitive loss, Primary Frontal Dune mapping, Coastal Structures Inventory, and *South Shore Coastal Hazards Atlas* projects and identify policy and regulatory implications; review current Executive Orders and WPA and State Building Code requirements to identify policy and regulatory issues; and identify LID techniques that can address stormwater and pollution prevention issues in the coastal floodplain. The Fellow will then prepare a report on the state of the science, policy, and regulatory environment for coastal floodplain management in Massachusetts, which will be reviewed by his/her mentors and other technical advisors. If requested by the Coastal Hazards Commission, the Fellow will present a briefing on the report.

Outcomes and Milestones: A report that evaluates the status of coastal floodplain management in Massachusetts. (*Completed by January 2007*)

Objective 3 - Coastal Floodplain Task Force

The CZM Director will work with DEP and the Executive Office of Environmental Affairs (EOEA, the Massachusetts cabinet-level agency on the environment) to reconvene a Coastal Floodplain Task Force, which will work in cooperation with the Coastal Hazards Commission but will focus exclusively on

coastal floodplain issues. To address evolving “smart growth” concepts, a Task Force representative with LID expertise will be sought to augment the expertise of the original Task Force, which included coastal geology and coastal hazards, land use planning, the State Building Code, and emergency response. The Fellow will serve as lead staff for the Task Force, which will begin deliberations based on the reports developed by the Fellow in Objectives 1 and 2. The Task Force will be the primary technical/policy advisors for the development of coastal floodplain management recommendations.

Outcomes and Milestones: Effective deliberations resulting in recommendations for coastal floodplain management strategies in Massachusetts (see Objective 4). (Task Force will be convened in January 2007 and is expected to serve for 12 months)

Objective 4 - Recommendations for coastal floodplain management in Massachusetts

As lead staff for the Task Force, the Fellow will be in a unique position to help support and guide the development of planning, policy, and regulatory recommendations for improved floodplain management in Massachusetts. While it is anticipated that the Task Force will develop consensus recommendations within a year’s time, the Fellow can successfully complete his/her project even if consensus is not achieved. To ensure this end, the Fellow will develop a report on recommendations for coastal floodplain management in Massachusetts based on the work of the Task Force. If consensus has not been achieved, the Fellow will work with his/her mentors and management from CZM, DEP, and EOEA to resolve outstanding issues for the purposes of completing the report.

Outcomes and Milestones: A report outlining recommendations for comprehensive coastal floodplain management in Massachusetts, identifying opportunities for strategic planning, regulatory revisions, policy changes, and implementation of other management tools. (Completed by May 2008)

Objective 5 - Implementation Plan

The Fellow will work with his/her mentors to develop a plan for implementing the recommendations identified in Objective 4. This plan will identify the resources needed for implementation, the lead agency/organization responsible for implementation, obstacles to success, activities and materials necessary to attain results, and specific steps and a timeline needed for successful implementation. As appropriate, the implementation plan will be used to develop a CZM work plan for coastal floodplain management. The plan will be reviewed by the mentors, CZM management, and management of other agencies/organizations identified in the plan.

Outcomes and Milestones: Implementation Plan. (Completed by June 2008)

Objective 6 - Implementation

It has been CZM's experience that CSC Fellows are creative, dynamic, opportunistic, and productive individuals who routinely exceed our expectations. Although this is an ambitious Fellowship project, it is possible that the Fellow can move beyond the planning phase and into the implementation phase. Consequently, if time allows, the mentors will work with the Fellow to implement specific coastal floodplain management strategies, which may include the development of CZM policy, development of technical guidance on floodplain management, drafting regulatory revisions, and/or the development of similar tools. This objective also recognizes that outside constraints may affect the Coastal Floodplain Task Force and/or that the Task Force may need additional time to reach consensus. If either is the case, the mentors will work with the Fellow to adapt the objectives to focus on developing floodplain management strategies that can be implemented by CZM itself, or by local governments, as well as the actual implementation of these strategies.

Outcomes and Milestones: The outcomes of this objective will include specific implementation products, such as a draft CZM Floodplain Management Policy, proposed revisions to WPA regulatory language, technical assistance materials, and other similar products. If CZM funding permits, the implementation stage of the project could extend beyond the two-year Fellowship with the Fellow remaining as a CZM staff person focusing on coastal floodplain management.

Fellow Mentoring

CZM will serve as the host agency for the Fellow. CZM staff members are involved in a variety of proactive coastal hazards resource planning, management, and research activities, providing many opportunities for professional development. As mentioned above, the CZM Coastal Geologist and Coastal Smart Growth Coordinator will directly mentor the Fellow. In addition, CZM project review, regional coordination, data management, and outreach staff will provide assistance as necessary to ensure success of the Fellowship. This fellowship project provides a unique opportunity to translate science and planning into policy and realistic implementation strategies for some of today's most pressing coastal zone management issues.

CZM has benefited greatly from NOAA Coastal Fellows in the past. Several have stayed beyond their two-year terms as contractors or permanent employees. CZM looks forward to continued success with this program.

Project Partners

The Fellow will work closely with the Coastal Hazards Commission, DEP and EOE staff, and the Coastal Floodplain Task Force. The state's LID Working Group (which includes 75 government agencies, conservation organization, and private corporations)

can also provide technical guidance and support on incorporating LID techniques into coastal floodplain management strategies.

Cost Share Description

CZM will provide the match for the proposed fellow through state bond (capital) funding. The annual \$7,500 match requirement will be incorporated in CZM's annual capital spending request. This funding is granted annually and is considered a "fixed" or consistent cost. It is not subject to cutbacks and is a portion of the state's financial commitment to CZM.